history

LINK-BELT SPEEDER CORPORATION

Cover Photo
Link-Belt Speed Corporation Plan Administrative Offices Looking Southeast December 1948. (Courtesy of Carl & Mark Koehler History Center)

HISTORY OF
LINK-BELT SPEEDER CORPORATION

by
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THE Louis Berger Group, INC.

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introduction

The Link-Belt Speeder Corporation factory complex manufactured cranes, power shovels, excavators, draglines, hoes and pile drivers with multiple applications in a variety of industries that used heavy machinery in their operations. Between 1939 and 1986, the company owned and operated a plant in Cedar Rapids, Iowa, at 1201 6th Street SW along the Chicago, Milwaukee, and St. Paul Railroad. The facility served as the administrative headquarters and primary factory for the company's heavy machinery division. When completed in 1948, the new building complex was the largest facility of its kind. The corporation became a leader in the United States for the production of heavy equipment used in road building, construction, industrial plants, mining, railroads, utilities, scrapyards, logging, quarries, pipelines, and general material-handling operations. With a reputation for production and dependability, Link-Belt Speeder Corporation became particularly known for its line of cranes. Its flagship model for over 42 years was the LS-98 Clamshell Crane with trademarked Speed-O-Matic power hydraulic controls. The facility manufactured nearly 30,000 Link-Belt cranes over 47 years of operations in Cedar Rapids.

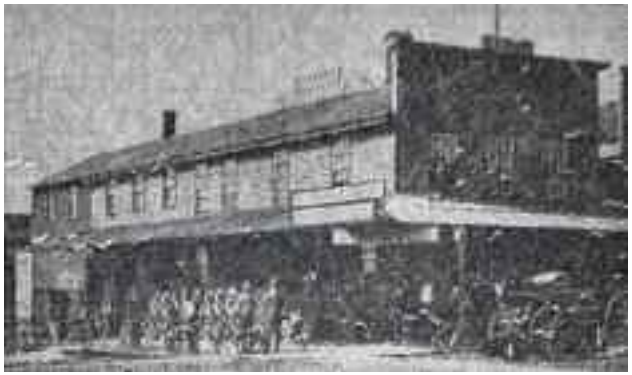


Figure 2.
1877 photo showing building in Belle Plaine, Iowa, where William Dana Ewart invented the link-belt in 1874. From *Cedar Rapids Gazette,* March 10, 1940.

The company originated as the Ewart Manufacturing Company in 1874, in Belle Plaine, Iowa. Two other companies were formed later, Link-Belt Machinery Company (1880) and Link-Belt Engineering Company (1888). These three companies combined in 1906, to form the Link-Belt Company. George T. Ronk formed a contemporary company called Speeder Machinery Company in Leon, Iowa, in 1919. Link-Belt Speeder Corporation formed in 1939 when Link-Belt Company purchased and merged with the Speeder Machinery Company, to form a wholly owned subsidiary based in Cedar Rapids. The Good Roads Movement and the National Highways Movement impacted Link-Belt Speeder's development by helping to enhance the market for their products starting in the late nineteenth century.

CEDAR RAPIDS:
"THE ROAD MACHINERY CAPITAL"

Cedar Rapids was one of the three largest manufacturing centers of road-building equipment in the United States in the early years of the twentieth century, along with Peoria, Illinois, and Milwaukee, Wisconsin, leading Howard Hall to call it the "road machinery capital of the world."[1] The city's prominence as a road-manufacturing center attracted 108 foreign engineers to the city in 1947, as they studied the latest developments in engineering and road-building equipment during a tour of the U.S.[2] During the first half of the twentieth century, five road machinery manufacturing companies called Cedar Rapids home: Iowa Steel & Iron Works, Iowa Manufacturing Company, Universal Crusher Company, LaPlant-Choate Manufacturing Company, and Link-Belt Speeder Company. Link-Belt Speeder Company manufactured road building equipment that included cranes power shovels, excavators, draglines, hoes and pile drivers. These products were also used in a variety of other industries as heavy material-handling equipment. Cedar Rapids' road machinery companies developed and took advantage of markets provided by the Good Roads Movement and the National Highways Movement.

Figure 3.
First Link-Belt Co. steam powered, wide-gauge, coal handling clamshell crane. Circa 1894. From cover of "Continuous Innovation… For Over 118 Years," Link Belt Construction Equipment Co. Brochure, September 1991.

Figure 4.
Early Speeder Model B Shovel Crane produced at the Fairfield, Iowa Speeder plant in 1922. From Link-Belt Cranes Booklet circa 1985, p. 19. (Courtesy of Carl & Mary Koehler History Center).

GOOD ROADS
AND THE NATIONAL HIGHWAY MOVEMENT

The evolution of the national highway movement started with the Good Roads Movement (1880-1920), followed by federal legislation and state efforts that culminated with passage of the *Federal-Aid Highway Act of 1956.* The Good Roads Movement began in 1880 as an effort by the League of American Wheelmen (LAW) to fight for better roads and streets for bicyclists. In 1890 America's population of 62,947,714 was serviced by 2,000,000 miles of roads.[3] Two out of every three people lived in rural areas, and many of the roads were unpaved dirt roads that were poorly maintained. Rural and farm populations proved reluctant to the idea of funding rural highways because they did not see how they would benefit—they viewed the funding as just another tax burden. Jeremiah W. Jenks, a critic of rural roads, stated that the "result [of poor rural roads] to farmers and the rural population was a constant sea of mud, soft surfaces, impediments to travel that in fact reduced their ability to communicate with their neighbors or move their goods to market."[4]

Albert Pope, a member of the LAW's executive committee and a bicycle manufacturer, founded the National League for Good Roads (League) as an interstate lobbying organization in 1892 with its first convention held in St. Louis, Missouri the same year. In 1892 the League began publishing *Good Roads Magazine* and had chapters in each state. A convention of 38 states in Chicago formed the National Good Roads Association in 1900. The National Grange and Populist movements also provided support for Good Roads. Both of these

movements worked to improve the social and economic conditions of farmers and other working-class people and fought monopolies such as the railroads. The rise of the automobile gave greater impetus to the movement as trucks and cars came into popular use. Advocates argued that poor roads led to massive waste in money spent on repairs and hindered economic growth by making it difficult to get from farm to market. They also argued that improved roads would help make travel faster and more pleasant as well as bringing more amenities to rural areas. Supporters all shared the same goal of better roads but lacked consensus on the best route for making it a reality.

Two schools of thought competed over how best to approach improving roads in the United States that created a gap between those who advocated long-distance roads versus those pushing for farm-to-market roads. The first argued that the federal government should build, own, control, and maintain national roads using federal funds and directly hire engineers and other workers to oversee and direct the projects. The other called for federal aid to states and local governments, which would oversee the building and improvement of roads (federal-aid system). President Charles Henry Davis of the National Highways Association (NHA) advocated for the former in 1913. Davis founded the NHA in 1911 and incorporated it in Washington, D.C., in 1912, with the slogan "Good Roads Everywhere." He argued that adoption of the federal-aid scheme would lead to a haphazard array of standards for road construction and maintenance. He further argued that it would and create a confusing network of roads resulting from "roads beginning nowhere, ending nowhere."[5] Davis proposed adopting a nationalized system. This system would span 50,000 miles, follow uniform construction and maintenance standards, and feature a system of feeder roads in the form of state highways and local roads that would reach 60 percent of the nation's population directly.[6]

In 1893 the United States Department of Agriculture created the Office of Road Inquiry to study and disseminate information on road-building techniques, and the agency became an advocate for mechanization. In 1912 Congress passed the *Post Roads Act*. The legislation authorized a joint congressional committee study that provided federal aid for highways and authorized $500,000 for an experimental program in which state and local governments willing to pay two-thirds of the cost of a postal road improvement project could receive federal funds. The act was a compromise between farmers wanting federal funding

Figure 5. Speeder Machinery crane unloading dirt into back of truck. Circa 1926. (Courtesy of Iowa Department of Transportation, Photo ID. HA1.011.0261.)

Figure 6.
LS-98 Link-Belt Speeder Crane Preparing Bridge Footing for I-80 Bridge Near Bettendorf dated 1-10-1957. (Courtesy of Iowa Department of Transportation, Photo Id. HA1.050.0030)

for all-weather, farm-to-market roads and the automobile industry and motorist groups that wanted hard-surfaced, interstate roads.[7] The *Federal-Aid Road Act of 1916* adopted the federal-aid option and provided $75 million for a 50-50 match to the states for projects administered by state highway agencies staffed with engineers with "approval authority so they could ensure the projects were designed and constructed properly."[8] The construction cost could not exceed $10,000 per mile, and the states were required to maintain the roads. In 1919 Dwight D. Eisenhower, as an Army captain, embarked on a cross-country tour of military vehicles that impressed upon him the importance of a national system of roads (this would be reinforced by his experience in Germany during World War II).

Several acts followed, furthering the expansion of the highway system. *The Federal-Aid Highway Act of 1921* (Phipps Act) created a program to provide state aid to build an interconnected interstate highway system. The new act made 7 percent of all state roads eligible for funding in addition to inserting the requirement that three-sevenths must be interstate in character. Based upon this act, the Bureau of Public Roads designated 169,012 miles of public roads with $189 million being expended to improve 10,252 miles of roads in what was termed the "golden age of road building" in the 1920s.[9] During the Great Depression a series of grants were authorized to the states without a match requirement to stimulate the economy and help stave off some of the effects of the economic calamity with around $3.3 billion provided to state and local governments for highway and road construction.[10] *The Federal-Aid Highway Act of 1938* authorized a feasibility study for a toll-financed system of north-south and east-west superhighways. *The Federal-Aid Highway Act of 1944* called for a national interstate highway system spanning 40,000 miles but provided no funding. Finally, in 1956 the *Federal-Aid Highway Act of 1956* was passed by Congress and signed by President Eisenhower, officially creating the Interstate Highway System. The act authorized $25 billion for the construction of 41,000 miles of highway over a 10-year period and paid 90 percent of the cost.

LINK-BELT COMPANY (1874-1939)

Figure 7.
William D. Ewart 1880 Founder of Link-Belt Co. in 1880 (Courtesy of Carl & Mary Koehler History Center).

The origins of Link-Belt Company date to September 1, 1874, when William Dana Ewart and the Ewart Manufacturing Company obtained a patent for a square detachable link for a chain belt. Ewart worked with the Chicago Malleable Iron Company to create the initial "Link-Belt" and established a market for his patent by installing his chain belt in agricultural self-binding harvester machinery at the 1874 Inter-State Industrial Exposition of Chicago.[11] Ewart was a farm implement dealer in the small rural community of Belle Plaine, Iowa, located about 40 miles southwest of Cedar Rapids. Prior to his invention, mechanical harvesters were manufactured with continuous chain belt drives made up of square and flat links that would wear unevenly and break in one spot, necessitating the replacement of the entire belt and ultimately delaying harvest. The new chain belt enabled quick repairs in the field and was the foundation for various types of power transmission and materials-handling equipment produced by the Link-Belt Company. Products manufactured included coal and ash handling machinery, electric hoists, grab buckets, portable wagon loaders, gondola car unloaders, elevators and conveyors for all materials, belt conveyers, bucket carriers, and other machinery.

The self-binding harvester was perfected by 1880 to complete Cyrus McCormick's 1872 automatic harvester invention. The self-binding harvester automatically harvested and bound grain with twine in uniformly sized bundles before dumping them in piles on the ground. One man drove the harvester pulled by horses and a second shocked (stacked for drying in field) the bundles.

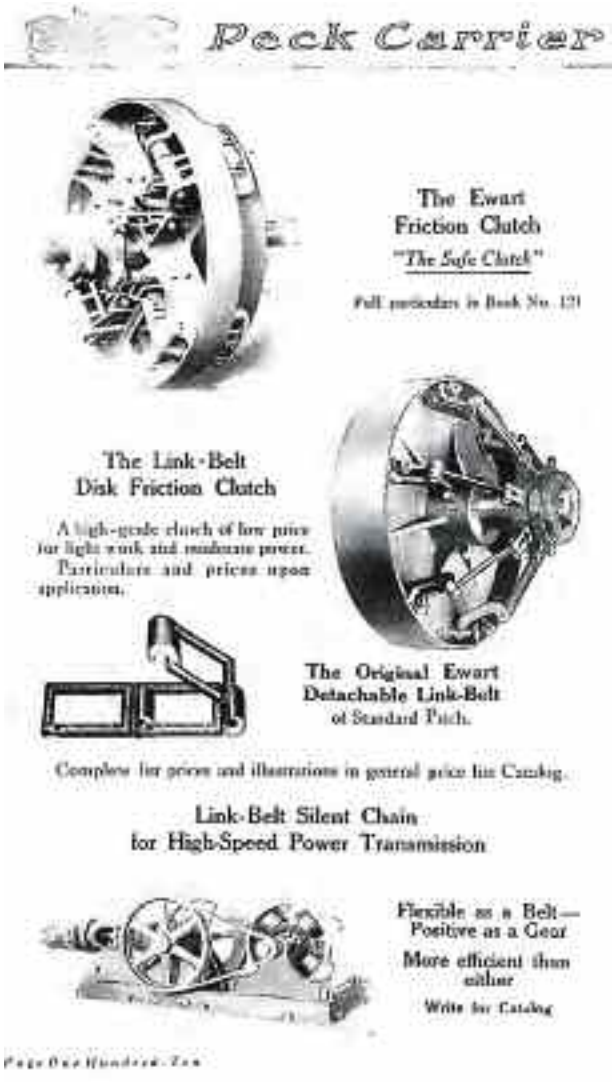


Figure 8.
Link-Belt Products Illustrated. From: Link-Belt Company. *Peck Carrier : Patented December 25, 1900 for Coal, Coke, Ashes, Cement, Sand, Stone, Ore, and Other Materials Book No. 120,* 1913, p. 107.

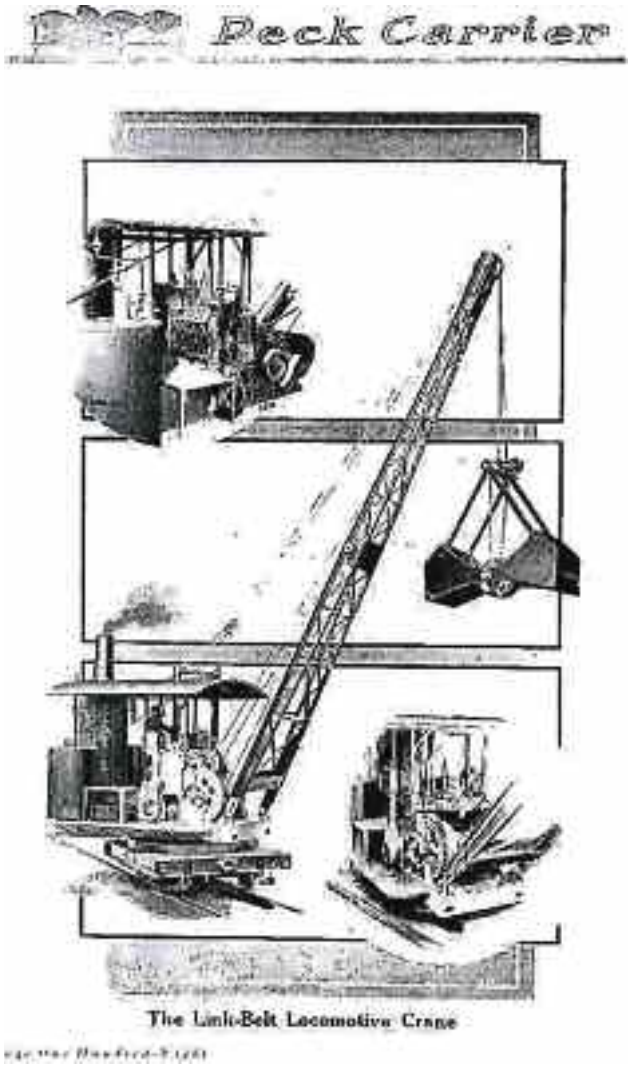


Figure 9.
The Link-Belt Locomotive Crane. From: Link-Belt Company. *Peck Carrier : Patented December 25, 1900 for Coal, Coke, Ashes, Cement, Sand, Stone, Ore, and Other Materials Book No. 120,* 1913, p. 108.

The industries using Link-Belt machinery included the brewing, mining, packinghouse, farming, saw and planing mills, and newspaper/printing operations. Ewart's ambitious efforts resulted in the founding of the Link-Belt Machinery Company (1880) and the Link-Belt Engineering Company (1888) as sister companies. The latter originated as a partnership with the Philadelphia, Pennsylvania firm of Burr and Dodge, as Ewart worked with its leaders, James Mapes Dodge and Edward H. Burr, to market and sell his malleable detachable chains.[12]

When the two firms consolidated, Link-Belt Engineering Company became the exclusive agent for Ewart Manufacturing Company in the eastern U.S. with Dodge serving as its president and chief engi-

neer. The newly formed operation also became a design center for new products with development of the Dodge Chain or "silent-chain," which greatly reduced the noise caused by the belt on gears. The Ewart Manufacturing Company manufactured and marketed malleable iron chains while the Link Belt Machinery Company was tasked with "finding applications for the chains and installing elevators, conveyers, and power transmissions in which they were used."[13] This helped the company lead the way in chain standardization and started the sprocket industry.[14] Ewart retained overall leadership of the three corporations until his death in 1908, when he was succeeded by Albert Kaufmann.

The three firms developed and introduced wide-gauge, steam-powered, coal-handling clamshell railroad cranes in 1894. These later evolved into lighter, more versatile versions around the turn of the twentieth century.[15] Link Belt Company's early crane designs set the basis for all future lines of cranes and power shovels produced by the company. In 1900 the "Link-Belt Crane" was advertised in one trade journal for use in handling sand, stone, and gravel "because it is speedy, easy to operate, and ruggedly constructed for hard service" and because "it represents the highest achievement in locomotive crane design."[16] The original locomotive crane was used for two different types of storage systems, circular and parallel. The revolving crane possessed the following distinctive features:

> *"Steel gears throughout, bronze bushings throughout, one point adjustment on clutches, few parts—every one accessible. Large, roomy platform for operator—everything handy. Exceptionally large factor of safety used; it is driven by steam or electricity, and equipped to operate Grab Bucket, Hook Block, Electric Lifting Magnet Drag Scraper Bucket, Steam Shovel Dipper and Pile Driver."*[17]

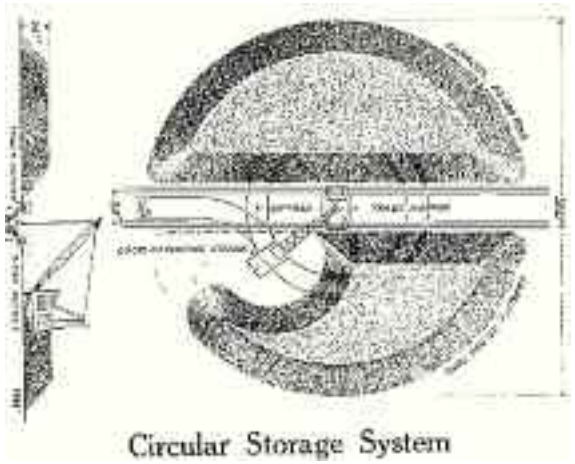


Figure 10.
Illustration of Link-Belt Crane used in Circular Storage System. From: Link-Belt Company. *Peck Carrier : Patented December 25, 1900 for Coal, Coke, Ashes, Cement, Sand, Stone, Ore, and Other Materials Book No. 120,* 1913, p. 107.

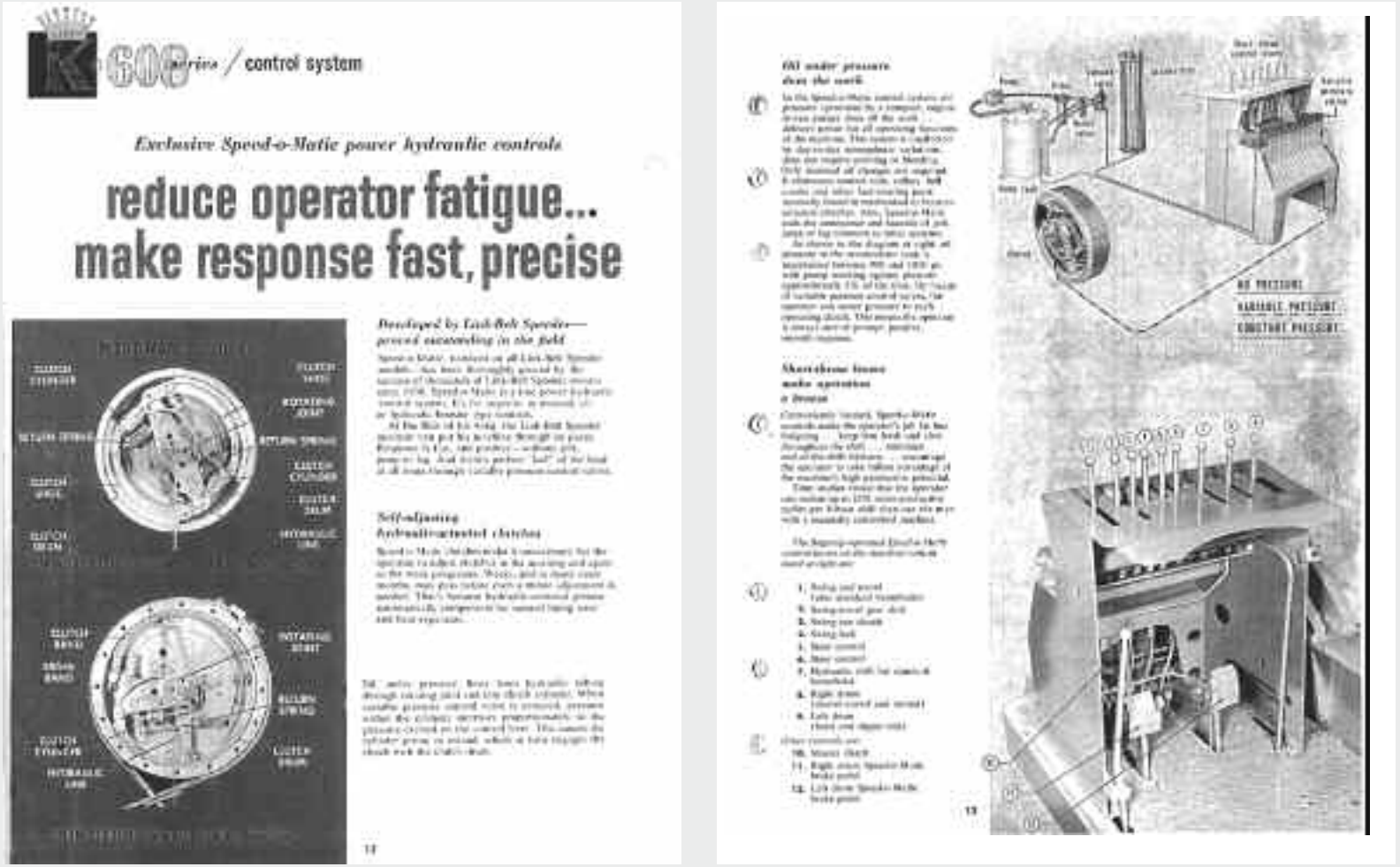
Figure 11.
Illustration of Link-Belt Crane used in Parallel Storage System. From: Link-Belt Company. *Peck Carrier : Patented December 25, 1900 for Coal, Coke, Ashes, Cement, Sand, Stone, Ore, and Other Materials Book No. 120,* 1913, p. 106.

William Otis invented the steam shovel in 1839 and, as denoted by the name, it was powered by steam boilers. These early power shovels were mounted on a railway chassis with a shovel arm able to achieve only a partial swing, thus required workers to lay temporary tracks to access work areas. During the nineteenth century two major innovations were made. Chain hoists were replaced by steel cables in the 1870s, and a full 360-degree swing was introduced by 1884 in England. Major American manufacturers included Marion Steam Shovel Company, Erie, P and H, and Bucyrus-Erie Shovel Company. Link-Belt joined this group in the 1890s with its first locomotive cranes and power shovels. Steam power gave way to gas and electric power by the 1930s.

In 1906 Link-Belt Engineering, Ewart Manufacturing, and Link-Belt Machinery merged to form the Link-Belt Company with its headquarters and manufacturing facilities located in Chicago, Illinois. One of the company's significant inventions was a coal conveyer developed by chief engineer Frederic V. Hetzel in 1914, which was the largest conveyer type of its kind at the time. In 1921 Link-Belt introduced the crawler-mounted crane/excavator.[18] This innovation spawned a complete line of crawler-mounted crane shovels to complement Link Belt's other line of locomotive cranes, malleable detachable link chains, and material-handling equipment. Link-Belt products were used on automobile assembly lines, including the Ford Motor Company's plants, coal mining and storage facilities, steam shovels concrete mixers, agricultural machinery, and urban sewage screens by 1925. The product lines grew in the 1930s to include models whose bucket capacity ranged from 3/4-cubic yard to 2 1/5-cubic yard shovel capacity.

In 1936 the Link-Belt Company invented the Speed-O-Matic, which became the standard for the crane-shovel industry and made all previous systems obsolete. The system was a set of power hydraulic controls. The trademark described it as:

> *Variable pressure hydraulic systems for controlling the operating functions of machines, such as cranes, shovels, draglines, or the like, each system including such elements as a source of supply of fluid, a pump, an accumulator, a plurality of fluid motors, a piping system, and fluid flow controlling valves. Speed-o-Matic was first used on cranes and shovels employing variable pressure hydraulic control systems."*[19]



K 608 series / control system

Exclusive Speed-o-Matic power hydraulic controls

reduce operator fatigue... make response fast, precise

Developed by Link-Belt Speeder—proved outstanding in the field

Self-adjusting hydraulic-actuated clutches

Oil under pressure does the work

Short-throw levers make operation a breeze

NO PRESSURE

VARIABLE PRESSURE

CONSTANT PRESSURE

Figure 12.
Two pages illustrating the "Speed-O-Matic Control System." From *Link-Belt Speeder, K-608 Series Booklet No. 27106,* September 1961.

Figure 13.
Speeder Machinery Crane/Excavator Advertisement From *Engineering News Record,* Vol. 99, No. 15, ca. 1927, p. 68.

SPEEDER (1919–1939) MACHINERY COMPANY

Founded in Leon, Iowa, in 1919 by George T. Ronk, the Speeder Machinery Company opened its first factory in the summer of 1920. The new company manufactured a new road machine, called a dirt shovel, to be "used by road builders, bridge contractors, ditch and levee construction, cellar and basement work and in fact wherever dirt is to be moved."[20] Speeder manufactured a line of small, gasoline engine powered, fully revolving cable excavators that included drag lines, shovels, and cranes used in road building and heavy construction operations. The nascent company moved twice before merging with the Link-Belt Corporation in 1939.

The company operated its factory in Leon from 1919 to 1922 and in Fairfield, Iowa, from 1922 to 1926, when it moved to Cedar Rapids. Initial operations were modest: when Speeder moved to Fairfield from Leon, they moved "two lathes, a drill press, a power saw, and a forge… [into] a dirt floored, wood framed, and galvanized iron roofed building about thirty feet by seventy feet in size."[21] A dragline (crane shovel operated by a system

of pulleys and wire rope used for digging and dredging, the first Speeder product was produced in the Fairfield building. The move to Fairfield and later Cedar Rapids both provided an expansion site sufficient for the company's needs and a larger pool of skilled workers to operate their manufacturing facility.[22]

The construction of Speeder's new plant in Cedar Rapids inspired the *Cedar Rapids Republican* to report on October 1, 1926, that "a modern plant of steel and concrete construction" with 35,000 square feet of floor space would be built by early December.[23] Prior to the completion of the new plant, Speeder temporarily used a former city streetcar barn to commence operations. This building was located adjacent to a vacant multi-block parcel along 6th Street SW, previously utilized as circus grounds. The 1913 Sanborn Map Company fire insurance map shows a two-story Imperial Furniture Company warehouse in the southeast corner of Cedar Rapids City Block 91 with an adjacent dwelling on the north. The $40,000 plant was constructed by local Cedar Rapids operation O.F. Paulson Construction Company with steel supplied by Iowa Steel & Iron Works.[24] Additionally, the Iowa Railway & Light Company provided railroad access to facilitate shipping and receiving operations for Speeder.

During the first year of operation, the firm brought 100 workers to Cedar Rapids from Fairfield and other local communities to produce approximately 88 machines.[25] Among its accomplishments, Speeder introduced a wheel-mounted excavator, the Tumblebug, in 1922 along with a direct cable crowd for shovels. The cable refers to the system of hoisting the shovel apparatus, and the crowd refers to the horizontal motion of the bucket while digging. The direct cable meant that the same wire could be used to raise and operate the bucket. Speeder made an unverified claim that this was the first produced of its type.[26]

Figure 14.
Early Speeder Machinery Co. Advertisement Ca. 1919 (Courtesy of Carl & Mary Koehler History Center)

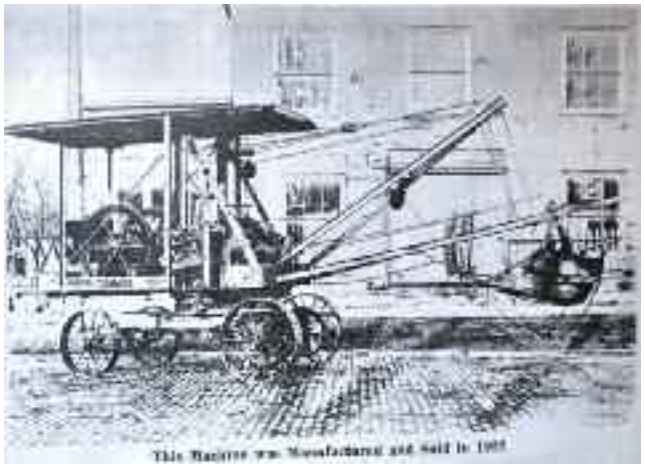


Figure 15.
Speeder Machinery' Tumblebug, Circa 1922. From November 1954 *Link Belt Speeder Co. Plant Talk*

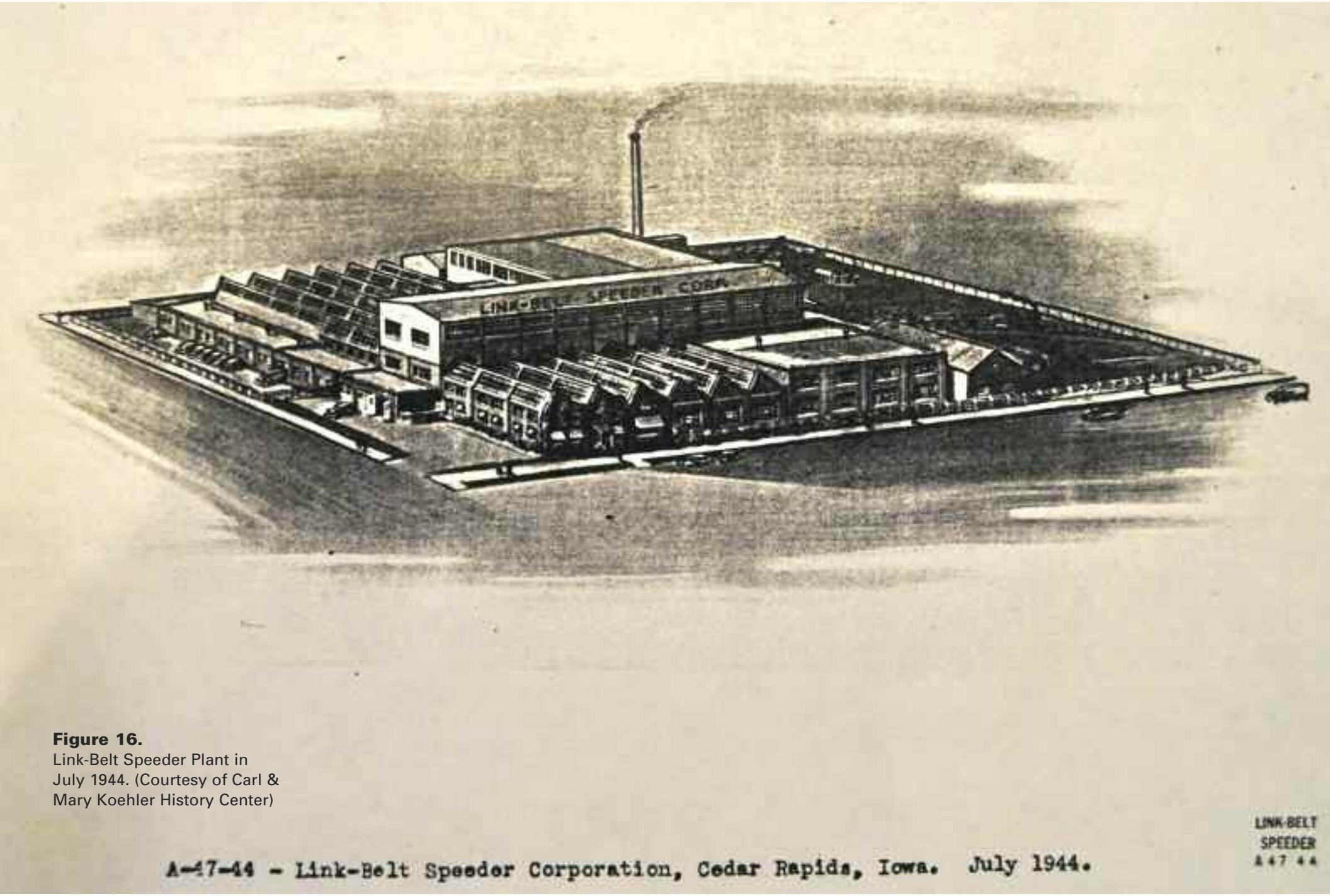


Figure 16.
Link-Belt Speeder Plant in July 1944. (Courtesy of Carl & Mary Koehler History Center)

LINK-BELT SPEEDER COMPANY (1939-1966)

On April 29, 1939, Link-Belt Company of Chicago announced the merger of its shovel division with Speeder Machinery Company of Cedar Rapids.[27] The newly formed, independent subsidiary of Link-Belt Company became known as Link-Belt Speeder Corporation with T.M. Deal as its president. Alfred Kauffmann was serving as president of Link-Belt Company (after Ewart's 1908 death). At the time Link-Belt Company operated engineering plants in Chicago, Philadelphia, San Francisco, Atlanta, and Toronto, Canada. Jerome Greenberg, a contemporary studying the company, described the reason for and results of the merger as follows:

> *"the merger brought together two companies whose markets and modes of operation were considerably different, and, to a great extent, quite limited, due to the restricted range of sizes which each had to offer. It gave the union a much broader market to draw from, not only from the ultimate user's standpoint but also from the strengthened distributor organization."*[28]

The merger combined the smaller machines (3/8 yard and 3/4 yard) of Speeder with the larger (3/4 yard to 2 1/2 yards) machines of Link-Belt to create a complete product line of cranes and power-shovels that were convertible to different attachments. The consolidated company also added machines with a 3-yard bucket capacity. The size of the bucket impacted the amount of material that could be moved at one time and the overall time required to complete a job. The newly combined company centralized its manufacturing, sales, and engineering in Cedar Rapids, which ushered in a 30-year period of substantial profit and growth with the expansion completed in 1948.[29] Prior to 1948, Speeder Machinery continued its operations independently from those in Chicago.

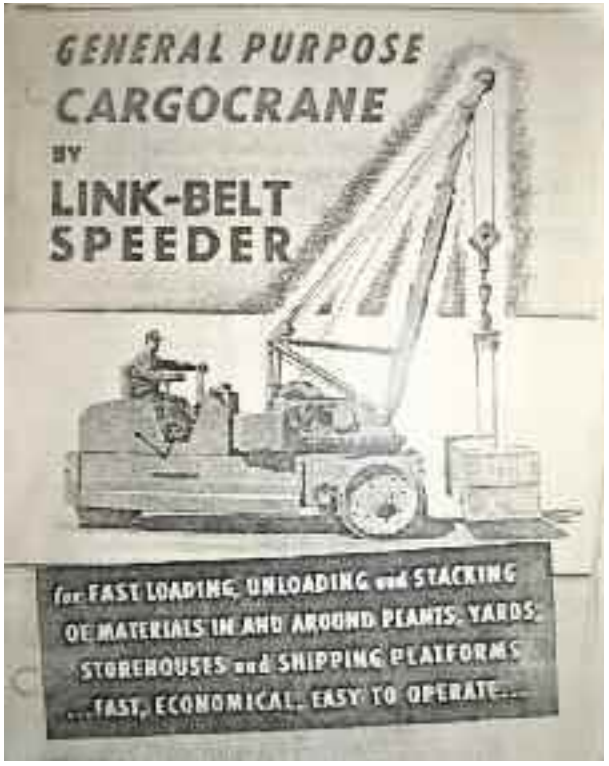


Figure 17.
YC-9 Cargo Crane Circa 1945. From Link-Belt Speeder Co. Sales Brochure *"General Purpose Cargocrane by Link-Belt Speeder."*

World War II interrupted plans for the expansion of the Cedar Rapids plant but did not stop the plant from contributing to the war effort. With a workforce of 500, the factory operated at capacity, manufacturing machines with newly introduced rubber-tired mountings.[30] Construction Battalions operated Link-Belt machinery on the war front that included the LS YC-9 Cargocrane. This crane, designed to unload cargo from sea vessels, was mounted on rubber wheels. A brochure for the LS YC-9 explained that:

> *"Wartime necessity has created a new Link-Belt Speeder Cargocrane for many post war use. The new, general purpose crane is an "Army Baby," for it was developed as the result of a series of discussions between Link-Belt Speeder technicians and Army engineers. The U.S. Army Transportation Corps needed a small, fast unit to handle loading and unloading at embarkation docks, and Link-Belt Speeder met their specifications with a machine [the YC-Cargocrane] that combines strength, stamina, and stability with great operating ease."*[31]

After the war ended, Link-Belt Speeder began manufacturing a line of truck and self-propelled cranes, based upon designs formulated prior to and during World War II. Following the success of these products, Link-Belt Speeder completed building plans and drawings for an expanded facility in 1946. Chicago architect Milton Searle Carstens and structural engineer J. Kenny Johnson designed the new plant, and Angot P. Larson built the new structure. The plant, completed in 1948, consisted of 200,000 square feet of manufacturing space and offices and was valued at $500,000.[32] Link-Belt's heavy equipment manufacturing operations were centralized with Link-Belt Speeder Company in Cedar Rapids because production costs in Chicago were too high for the company to maintain a profitable and sustainable position in the market.[33]

The design of the new factory followed the stripped Classicism often referred to as Moderne, characterized by its lack of ornamentation and the harmony between function and design. The administrative section was a two-story, L-shaped masonry building


Link-Belt Speeder Builds
New Plant Over Old While
Output Holds to Schedule

Figure 18.
Photo of Link-Belt Speeder Plant prior to and during construction of new plant building. From Sept. 1948 *Cedar Rapids Gazette.*

with poured concrete basement walls, floor, and foundation. Unique features included a curved northwest corner wrapped by smooth finished and fluted Indiana limestone panels, clay tile upper walls clad with red and gray brick, and glass block in entryways and window openings. Contractors erected the $1.75 million structure around the 1926 plant so that production would not be interrupted.

In 1949 the corporation introduced a full-function design that integrated the Speed-O-Matic power hydraulic controls and revolutionized the crane-shovel industry. The new design meant "that all equipment operations can be performed either independently or simultaneously" and that two-directional power was provided for all functions."[35] Functions could include raising, lowering, or swinging the boom, controlling and maneuvering the shovel, dragline, or pile driver, or other actions depending upon the attachment being used and the type of work being performed.

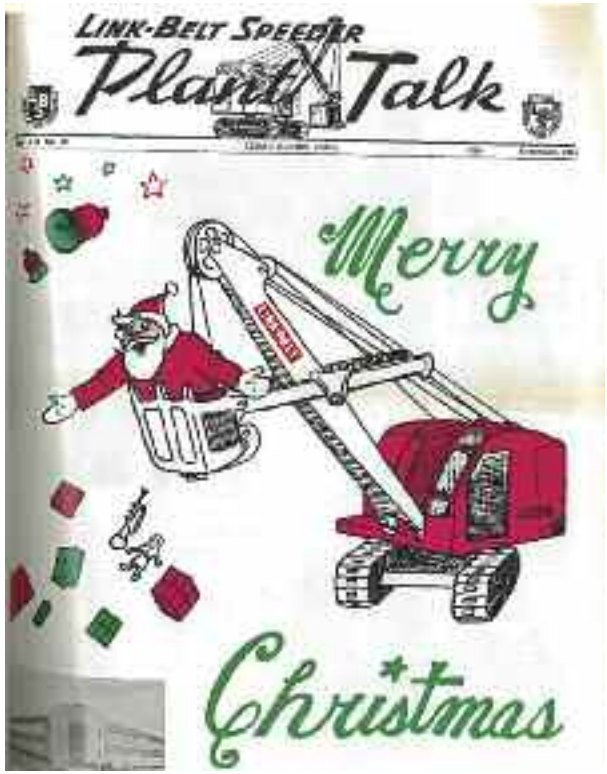


Figure 19.
Cover of December 1954 Link-Belt Speeder *Plant Talk*

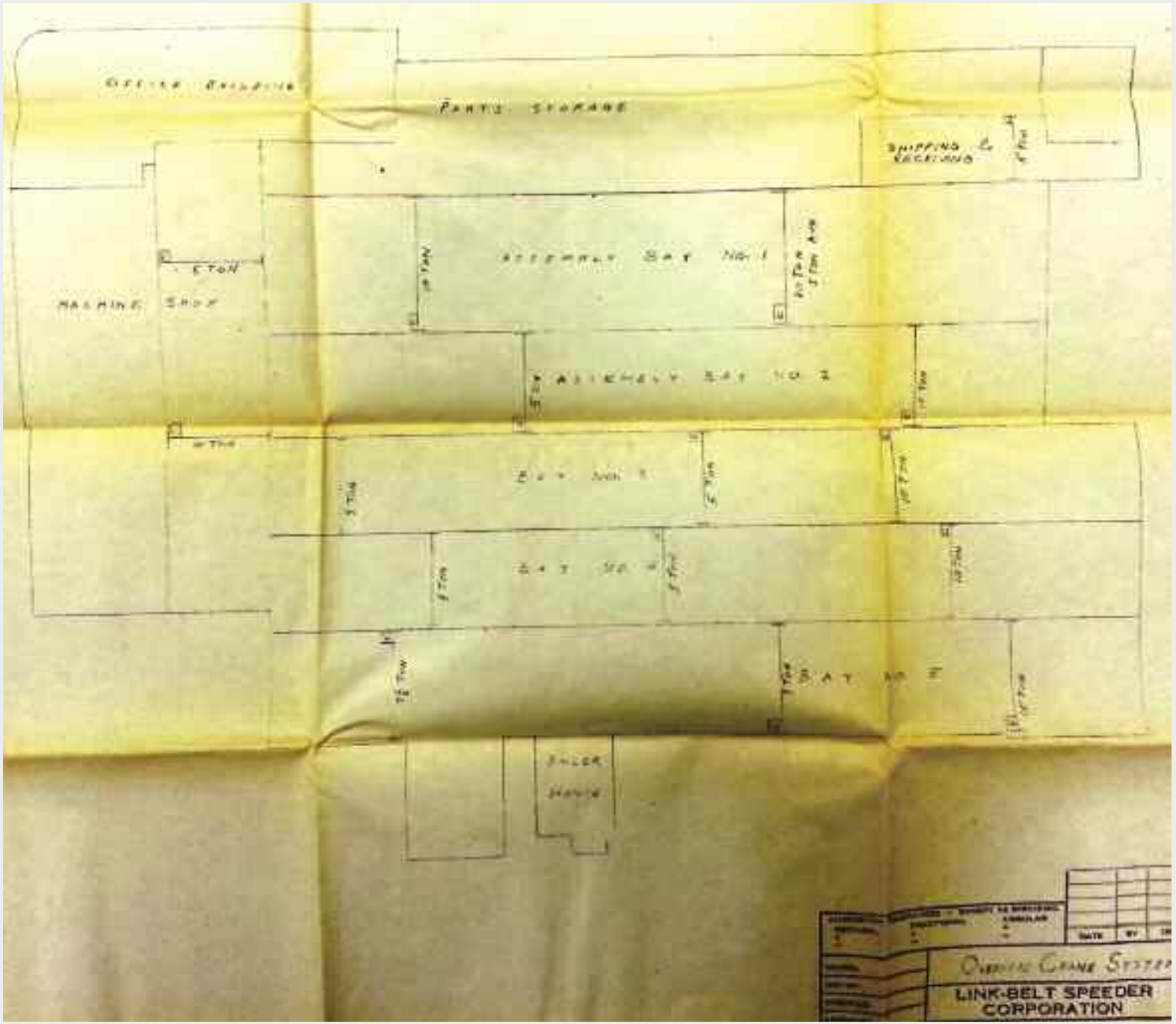


Figure 20. Link-Belt Speeder "Overhead Crane System" Plan showing layout of new plant completed in 1948. Exhibit III From Plant Study, Link-Belt Speeder Corporation, State University of Iowa Thesis by Jerome Greenberg, August 4, 1948. From University of Iowa Special Collections.

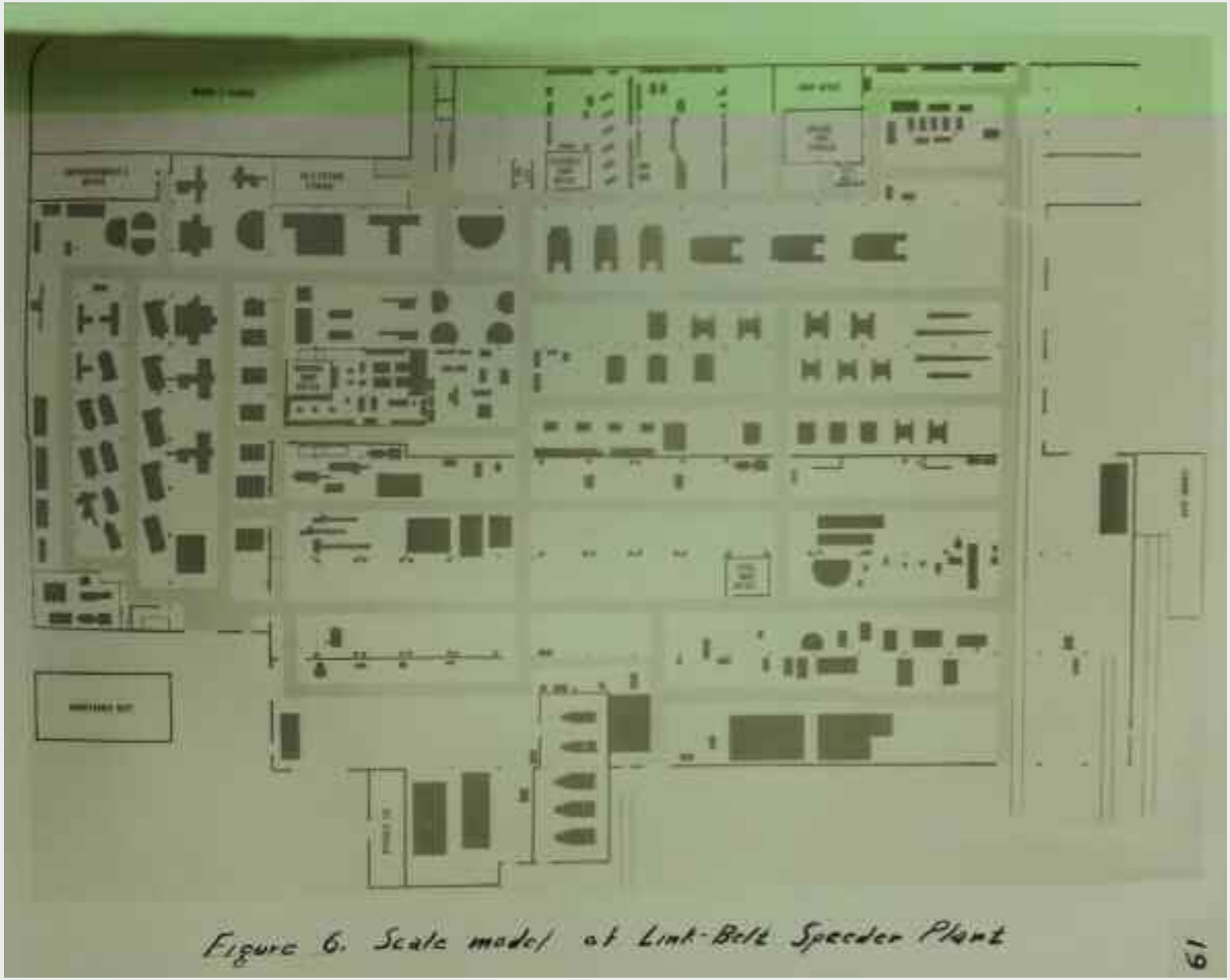


Figure 21. Scale Model of Link-Belt Speeder Plant. From Plant Study, Link-Belt Speeder Corporation, State University of Iowa Thesis by Jerome Greenberg, August 4, 1948. Found in University of Iowa Special Collections.

Figure 22.
Photo from 1950 strike at Link-Belt-Speeder Co. From "History Link-Belt Company, Speeder Machinery Company, Link-Belt Speeder Corporation, FMC Crane and Excavator Division" ca. 1985.

UNIONS AT LINK-BELT SPEEDER COMPANY

The United Auto Workers (UAW) represented the workers at the 1201 6th Street SW Link-Belt Speeder plant beginning in 1949. Prior to the UAW, employees were represented by two other unions, the Allied Independent Workers of Cedar Rapids and the AFL- International Association of Machinists, Harmony Lodge #831. Link-Belt Speeder only experienced one strike. In 1950, 700 employees walked out of the Cedar Rapids plant at 6 a.m. because two months of negotiations had failed to achieve a "15-cent-an-hour pay boost."[51] Of the workers who went on strike, 675 were represented by a third union, the Congress of Industrial Organizations (CIO) affiliated UAW Local #299. The strike lasted approximately 73 days before it ended on September 24, 1950. A two and one-half year contract agreement ended the strike. The terms of the agreement included an immediate 12-cent-per-hour wage increase with another five-cent increase in 1951, one to three weeks of vacation, and company-paid pensions and health insurance.[52] Arbitration and collective bargaining between the UAW and Link-Belt management continued after this strike, but workers never walked out over contract negotiations again. This was the result of effective internal negotiations that negated the need for a strike as management and workers came to a mutual understanding on contract provisions.

In effect, this full-function system was equivalent to the automatic transmission in automobiles. The system made movements much easier and effective allowing the operator to expend less energy and thus complete more work while on a job. Link-Belt Speeder moved to the forefront of the industry with this innovation. In 1954 they launched their flagship model the LS-98. The company sold and shipped 7,000 units to customers across the world over the course of 42 years. Between 1953 and 1957, the factory expanded to six city blocks covering over half a million square feet.[36] From 1954-1963, Link-Belt Speeder nearly doubled its net worth from $65 million to $95 million and the Cedar Rapids factory became the largest manufacturing facility in the nation specifically dedicated to cranes and shovels.[37]

The 1953 building was located north of the administrative building/factory and was separate from the main facility. The Austin Company of Chicago designed, engineered, and built two additions in 1956 and 1957, which cost $985,000 and brought the total size of the factory to more than 500,000 square feet.[38]

The Link-Belt Speeder site exceeded six city blocks in size after these expansions. The factory and its additions featured long work bays with a series of large overhead bridge cranes that operated on tracks. The work bays measured up to 250 feet and were utilized for assembly, machine shops, and painting. The 1956 and 1957 additions stood one story tall but matched the administrative building in height. With access to the important Chicago, Milwaukee, and Pacific Railroad Corridor in the Young's Hill Kingston Neighborhood, Link-Belt Speeder could ship its products directly by rail from tracks installed in the factory buildings.

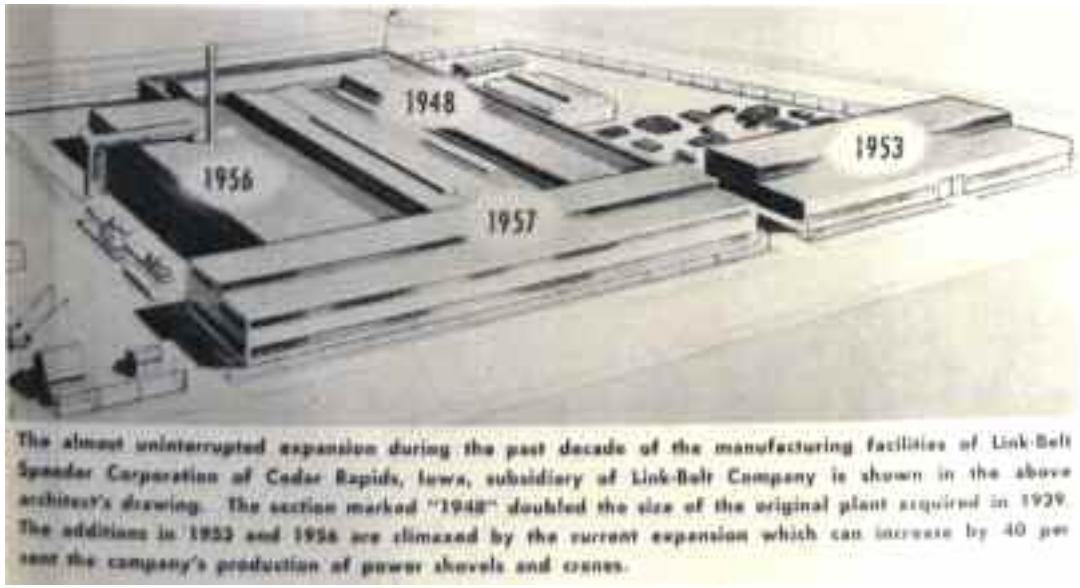


Figure 23.
Plant expansions completed from 1953 to 1957. From *Link-Belt Speeder Plant Talk,* April 1957.

Figure 24.
Road Builders Equipment Company Sales Brochure for LS-98, March 29, 1957.

In 1956, President Dwight D. Eisenhower signed the Federal-Aid Highway Act of 1956 that officially created the Interstate Highway System. The act approved $25 billion in funding between 1957 and 1969 to create around 41,000 miles of interstate highways with uniform design standards, 90 percent federal cost share, and a gas tax to help pay for the construction. The construction of the interstate system required massive amounts of heavy equipment for the construction of the roads, bridges, and overpasses. Iowa's interstate development plan initially called for 710 miles along Interstates 29, 35, 74, and 8, at an estimated cost of $478.77 million, with the first section of I-35/I-80 opening on September 21, 1958.[41] This was two years after the first bids were let in October 1956. The final section of the Iowa interstate system was completed on September 12, 1985, with the total mileage increasing to 781.51 miles at a total cost of $1.05 billion.[42]

Figure 25.
1950 Link-Belt Speeder Brochure (Courtesy of Carl & Mary Koehler History Center)

The Federal-Aid Highway Act of 1956 authorized the interstate highway system and started a significant increase in road construction throughout the nation. Link-Belt Speeder President David Lehti stated that the factory building constructed in 1957 would give them "the capacity to take full advantage of the substantial sales potential in the nation's long-range building program."[39] In 1963-1964 a water tower/tank was added along with a storage facility to the 1953 plant complex addition. Two years later, the corporation constructed a 160,000-square-foot plant on Bowling Street SW. By the end of the 1960s, Link-Belt Speeder employed close to 2,000 employees manufacturing 40 crane and excavator models.[40] The new facility also included new design laboratory facilities and expanded the total plant space in Cedar Rapids to over 1,000,000 square feet.

Figure 26.
Left: June 1964 Birdseye Photo of Plant. From: Plant Talk, June 1964; Top Right: Link-Belt Speeder Corporation, looking southeast, 1964 and Bottom Right: East Factory Addition, looking southwest, ca. 1957 (Courtesy The Carl and Mary Koehler History Center, Cedar Rapids, IA).

(1967–1980)
FMC ASSUMES OWNERSHIP

The FMC Corporation, then based in Chicago and now in Philadelphia, purchased and merged with Link-Belt Speeder in 1967. Link-Belt Speeder was now a subsidiary of FMC, but its heavy machinery manufacturing center remained in Cedar Rapids. The Cedar Rapids factory continued its production and employment growth despite a significant flood in 1968. During the latter half of the 1960s, the company added major manufacturing plants in Woodstock, Ontario, Canada; Queretaro, Mexico; and Milan, Italy. Utilizing its new product design laboratories at the 6th Street SW and Bowling Street SW plants, Link-Belt Speeder introduced a complete line of hydraulic self-propelled cranes in 1969 and a hydraulic truck crane in 1971.[43]

In 1972 Link-Belt Speeder Co. changed its name to the "Cable Crane and Excavator Division of FMC," but the Link-Belt Speeder brand continued. FMC President Robert H. Malott justified the name change on the basis of creating a unified FMC product brand for all of its products over its 35 divisions.[44] Growth continued at the Cedar Rapids plant. In 1973 there were 1,750 employees with an $18 million payroll. Employee numbers in Cedar Rapids peaked in 1979, with approximately 2,100 employees working "85,000 square feet of production, office and warehouse space at two facilities located in the city.[45] In 1980 the company produced over 200 designs with lifting capabilities of up to 700 tons.

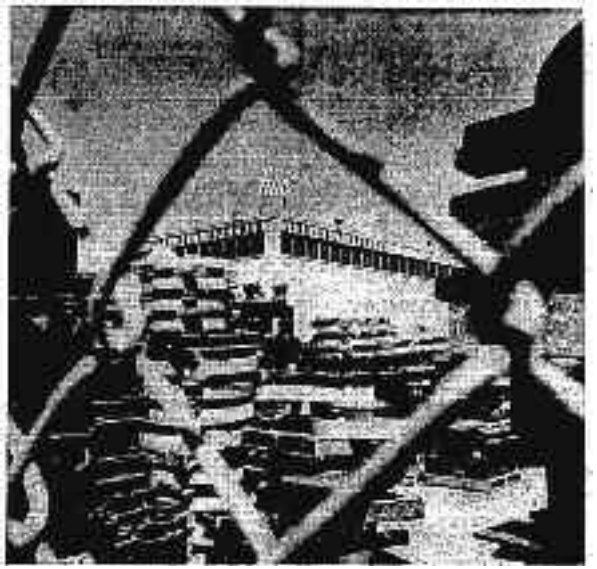


Figure 27.
View of plant through chain link fence with new FMC sign. From *Cedar Rapids Gazette*, June 17, 1973.

DECLINE AND CLOSING (1980–1986) OF CEDAR RAPIDS PLANT

The economic climate of the early 1980s tempered the growth of the previous 30 years for FMC and the Link-Belt division. Employment and production declined. Eventually the Cedar Rapids factories and administrative offices were closed and the property sold. High interest rates combined with a reduction in construction activity caused by a downturn in the economy reduced sales and led to worker layoffs. The workforce at the Cedar Rapids plant stood at 1,550 in July 1980 but was reduced to 700 in April 1982 and 380 in late 1983, when fewer than 100 worked on the production lines.[46] Citing major declines in construction equipment orders and construction investment, high interest rates, and declining profits caused by reduced demand and worldwide competition, FMC announced the closure of the Cedar Rapids plants (6th Street SW and Bowling Street SW) in early 1985.[47] The facility had manufactured nearly 30,000 Link-Belt cranes over 50 years.

In 1986 Sumitomo Heavy Industries Ltd. of Japan obtained the minority shareholder position for Link-Belt Speeder/FMC. Shortly thereafter, it took over the majority position. Also in 1986, FMC sold the 19-acre site at 1201 6th Street SW to the City of Cedar Rapids for $1.5 million. Link-Belt Speeder Corporation is currently owned by Sumitomo but has been divided into the Link-Belt Construction Equipment Company and Link-Belt Excavator (LBX) Company. The 1998 reorganization divided the excavator product line into a wholly owned subsidiary called the LBX Company. The cranes remained with the Link-Belt Construction Equipment Company formed in 1986. Both companies are currently headquartered in Lexington, Kentucky.

CEDAR RAPIDS PUBLIC WORKS AND 2008 FLOOD

In 1987 the City of Cedar Rapids Public Works Department assumed ownership of the Link-Belt Speeder site at 1201 6th Street SW and its buildings. The city added storage tanks for oil and chemicals, razed buildings for employee parking lots, and added other storage sheds. In June 2008 the Cedar River flooded, cresting at 31.12 feet at its height.[48] The flood affected 1,300 city blocks and damaged 5,238 houses, 77 non-profit and faith organizations, and 940 businesses—including the Link Speeder site. As of 2013, the flood had cost the City of Cedar Rapids over $500 million in damage. In 2011 the city decided to build a new structure instead of renovating the old 300,000-square-foot Link-Belt Speeder building at 1201 6th Street SW. Construction of the new building, to include offices and warehouses, was scheduled for summer 2012 with a fall 2014 completion date. The total estimated cost for the new city services building is $36 million with funding as follows: FEMA-$18.5 million, City of Cedar Rapids- $12.5 million, I-JOBS Grant-$5 million.[49] The new building's address will be 500 1st Avenue SW when completed. The facility will house the City Assessor's Office, Building Services Division, Public Works Department (Construction Engineering, Engineering, Forestry, Traffic Engineering and Street, Sewer and Forestry Maintenance Divisions), Fleet Services Division, Information Technology Department, and Parks and Recreation Department. The city decided to replace the existing building because it was cheaper than renovation and would allow for the consolidation of the previously-listed departments, which would improve city operations by placing them in a centralized location.[50] The Solid Waste and Recycling division building will be reused.

LINK-BELT SPEEDER CORPORATION BUILDING COMPLEX

Link-Belt Speeder Building Complex Resources and Building Sections[53]

#	Historic Building Name	Common Name	Date(s)	Status Contributing	Noncontributing
1	Administrative Offices	Administrative Offices	1948	X	
2	Original Factory		1948	X	
3	Building No. 16/North Factory Addition	City of Cedar Rapids Recycling Building	1953, 1964	X	
4	South Factory Addition		1956	X	
5	East Factory Addition		1957	X	
6		Materials Shed	ca. 1987		X
7	Building No. 19	Storage Building	ca. 1964	X	
8	Road Oil Building		ca. 1987		X
9	Road Oil Storage Tanks	2 Road Oil Storage Tanks	ca. 1987		XX
10		Canopy and Fuel Pumps	ca. 1987		X
11		Salt Dome	1987		X
12		4 Chemical Storage Tanks	ca. 1987		XXXX
13	Material Bunker	Material Bunker	1998		X
14	Underground Fuel Tanks	2 Diesel Tanks and 1 Unleaded Fuel Tank	1987		–
15	North Parking Lot	North Parking Lot	1987		–
16	South Parking Lot	South Parking Lot	1998		–
17	Smoke Stack		pre-1948		Nonextant
18	Water Tower		ca. 1964		Nonextant
19	Maintenance Building	Maintenance Building	ca. 1948		Nonextant

The City of Cedar Rapids Public Works Department occupied the Link-Belt Speeder Corporation Building Complex in 2011 when Maryls Svendsen conducted an architectural survey of the property for the Iowa Homeland Security and Emergency Management Department (IHSMED). The complex is sited on portions of a six-block area in the southwest quadrant of the city. The property's boundaries consist of 6th Street SW on the west, the former Milwaukee Railroad/Cedar Rapids and Iowa City Railroad corridor on the north, 4th Street SW on the east, and 15th Avenue SW on the south. The table at left, from the Iowa Site Inventory Form completed by Marlys Svendsen in 2011, lists the buildings and structures that comprised the Link-Belt Speeder Corporation Complex, which were built between 1948 and 1998.

The complex can be divided into two parts: north and south. The north half was established in 1939 and is defined by the second set of factory buildings erected following World War II. The south half consists of modern buildings built by the Cedar Rapids Public Works Department between 1987 and 1998 except for the ca. 1964 storage building (Building #7).

The Administrative Offices (Building #1) and Original Factory (Building #2) were built in 1948 based on plans drawn up in 1946. The two-story L-Shaped Moderne Style Administrative Offices was a masonry building with poured concrete basement, floor and foundation with clay tile upper walls clad in mottled red and gray brick. Smooth and fluted Indiana limestone panels wrapped the prominent, character-defining, curved northwest corner of the building. The glass walled addition along the north façade was built in 1998-99 by the City of Cedar Rapids and included new stairwells, elevators, and restrooms. Between 1987 and 1998 the interior of the Administrative Offices underwent renovations that removed original office walls and changed the interior configuration with drywall, painted concrete walls, long counters, vinyl and carpet flooring and acoustical tile ceilings. A prominent interior circular staircase in the northwest corner was retained until partially removed in 2008 due to flood damage.

The South Factory (Building #4) and East Factory (Building #5) Additions were built in 1956 and 1957. They are located perpendicular to each other and are connected to the original 1948 factory and administrative sections. These two buildings are one-story structures with poured concrete foundations, structural steel superstructure, and Johns-Manville Flat and Corrugated Asbestos “Transite” exterior cladding. Their height matched that of the two-story Administrative Offices section and the exterior painted. Original fenestration consisted of multi-light windows that had been replaced with corrugated fiberglass panels. Door openings were originally wood, but had been replaced by 2011 with modern metal slab doors. The interiors of the factory buildings were divided into long work bays with large overhead bridge cranes that moved products under construction along the various parts of the assembly line from end to end of each work bay. The work bays were arranged in north-south and west-east configurations, measured 250 feet long, had steel-catwalks and upper levels, concrete floors, and asbestos panel work bay dividers that doubled as fire protection. Operations in the bays included assembly, machine shops, and painting. The factory buildings had a sprinkler system and light was originally provided by continuous spans of multi-light metal windows on the upper and lower levels until replaced at an unknown date by fluted semi-opaque fiberglass panels.

The south end of the complex consisted of a series of buildings completed in 1987. These were built as the site was converted for municipal use. These included the Salt Dome, row of four street treatment chemical storage tanks, Road Oil Building, and two Road Oil Storage Tanks. Other structures include the one-story Materials Shed (divided into bays), Material Bunker (1998), three fuel storage tanks with fueling bays, and Storage Building #7 (ca. 1964). The pages that follow show the Link-Belt Speeder Corporation Complex as it appeared in 2011.

Figure 29.
Top Three Photographs: Administrative Offices (#1); Bottom Right: Original Factory and South Factory (#2 and #4) Addition View North in 2011. (Photographs by Marlys Svendsen, (IHSEMD), From *Link Belt Speeder Corporation Building Complex: State Historical Society of Iowa Site Inventory Form, 2011).*

Figure 34.
Exterior Views of Factory Additions in 2011 (Photographs by Marlys Svendsen (IHSEMD). From Link Belt Speeder Corporation Building Complex: State Historical Society of Iowa Site Inventory Form, 2011)

Figure 29.
Interior Photographs of Factory Interiors in 2011 (Photographs By Marlys Svendsen, IHSEMD. From Link Belt Speeder Corporation Building Complex: State Historical Society of Iowa Site Inventory Form, 2011)

LINK-BELT SPEEDER CORPORATION COMPLEX AND THE SURROUNDING NEIGHBORHOOD

The Link-Belt Speeder Corporation Building Complex is located within the Young's Hill/ Kingston Neighborhood. Kingston formed in 1852 and in 1870 Cedar Rapids annexed the area as West Cedar Rapids. William Buchanan, Andrew Murray, Orville Hull, and James Reed made a flurry of new plat additions between 1871 and 1874 along the northern and eastern edges of the current neighborhood.[54] In the 1880's, James C. Young spearheaded the addition of 15 new subdivisions as the city experienced significant population, commercial and industrial expansions along with the extension of streetcar lines into the area beginning in 1882.[55] Development of the northern and eastern blocks along the edge of the Young's Hill/ Kingston Neighborhood was largely completed by 1900 following an organic development pattern with a variety of different house designs and sizes.[56] Prior to World War I, the neighborhood was home to a large number of working class families. Between 1900 and 1920, five new plats were added including the Murray's 4th, Alandale, and Lennox Place Additions.

Significant West Side industrial companies that provided employment to neighborhood residents included the Williams and Hunting Company, Hubbard Ice Company, Cedar Rapids Pump Company, Chandler

Figure 30.
Building construction dates, looking northeast at north half of complex with building construction dates, ca. 2010. Construction dates for buildings and additions inserted (Courtesy City of Cedar Rapids Assessor. The building numbers and dates were inserted by Marlys Svendsen in 2011 inventory form for complex and correspond to table found on page 28).

Figure 31.
Northeast view of south half of complex, ca. 2010 (photo courtesy City of Cedar Rapids Assessor).

Pump Company, Dearborn Barass Foundry, Douglas Starchworks, Lousiana Penick and Ford Ltd., and Universal Crusher Company. A variety of factories were located along the important Chicago, Milwaukee, St. Paul and Pacific Railroad Corridor. The Iowa City Railway & Light Company incorporated in 1902 and laid the interurban tracks known as CRANDIC through part of the neighborhood along the railroad corridor. In 1926, the Speeder Machinery Company moved its factory to the Young's Hill/Kingston neighborhood along the Milwaukee Railroad Corridor and was purchased by Link-Belt Company of Chicago in 1939. The newly minted Link-Belt Speeder Corporation built a new factory in 1948 and with additions in 1953, 1956, and 1957 it expanded to cover six city-blocks and hundreds of Link-Belt Speeder factory workers lived in neighborhood from the late 1920s to the 1970s. A significant housing boom in the blocks to the south and west of the plant was spurred by the1948 expansion and the overall increase in homebuilding post-World War II.[57] The Young's Hill Kingston Neighborhood significantly benefitted from the emergence of the Link-Belt Speeder Corporation as a major employer, reaching 2300 at its peak.[58]

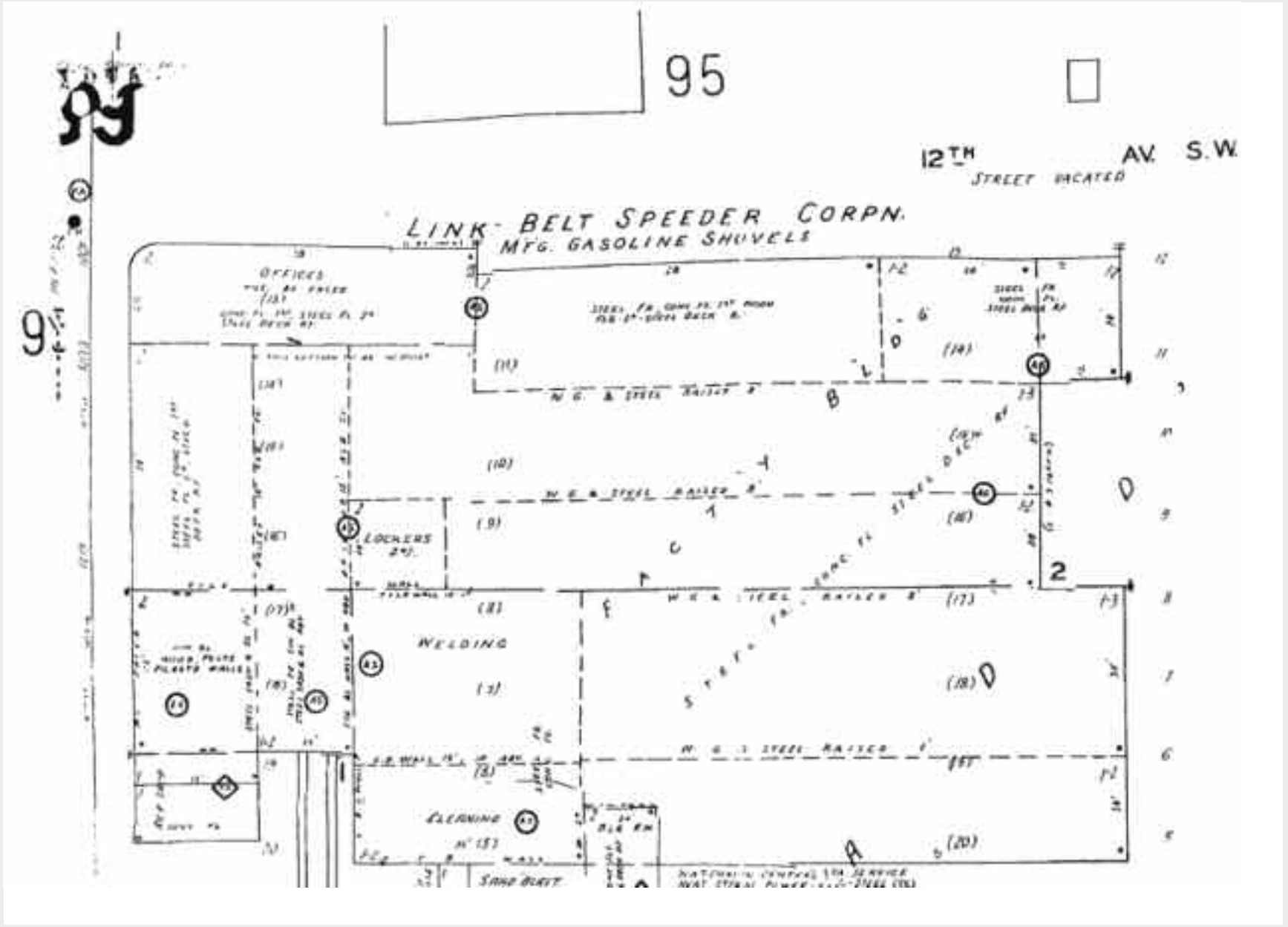


Figure 32.
Link-Belt Speeder Building Complex, Sanborn Co. Map, 1913 updated to 1949, available online at State Library of Iowa

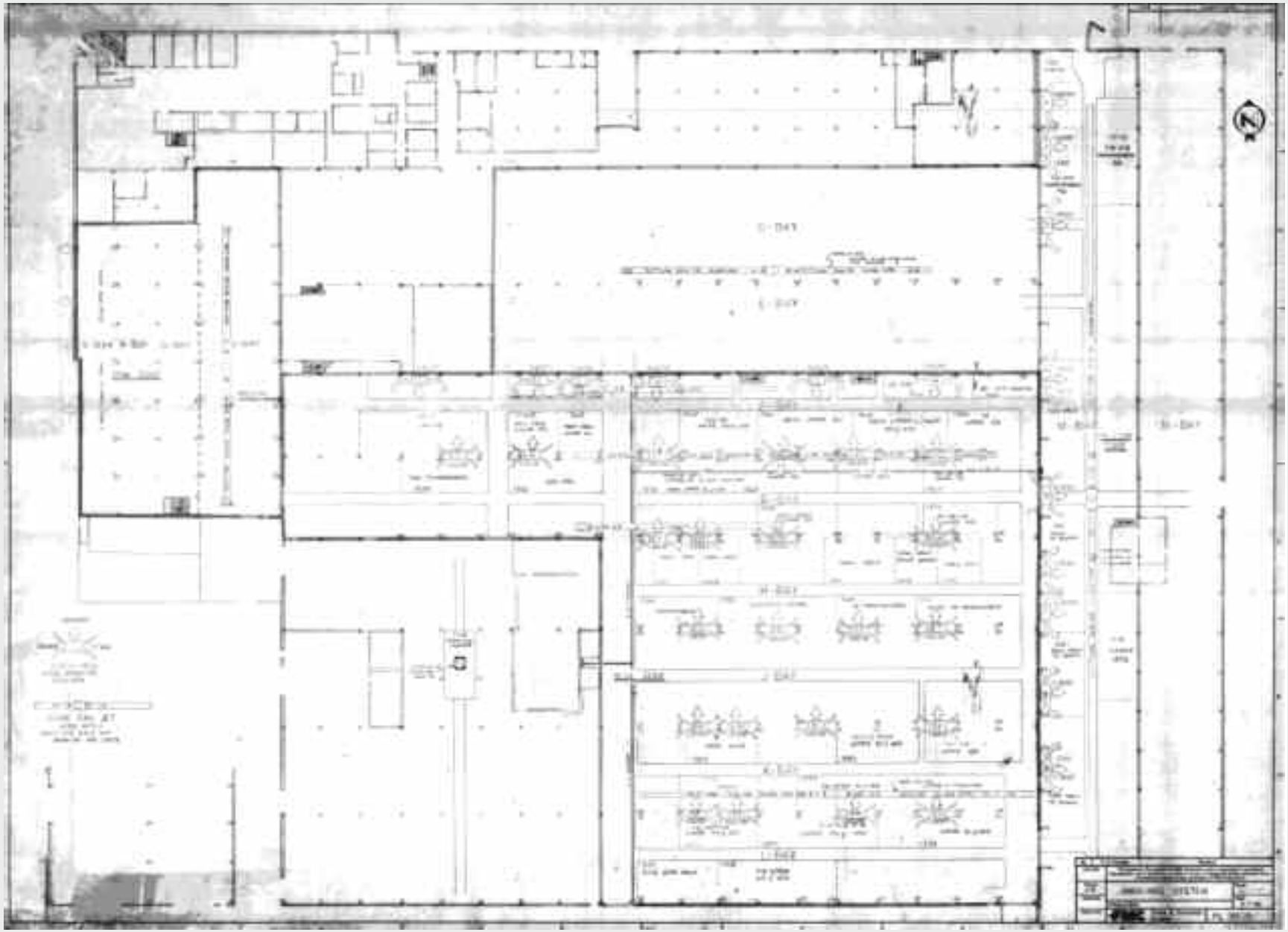


Figure 33.
"Smog Hog System," June 7, 1980 with alphabet named interior construction bays in main building "D" through "S" (Cedar Rapids Public Works Department, Facilities Maintenance Services)

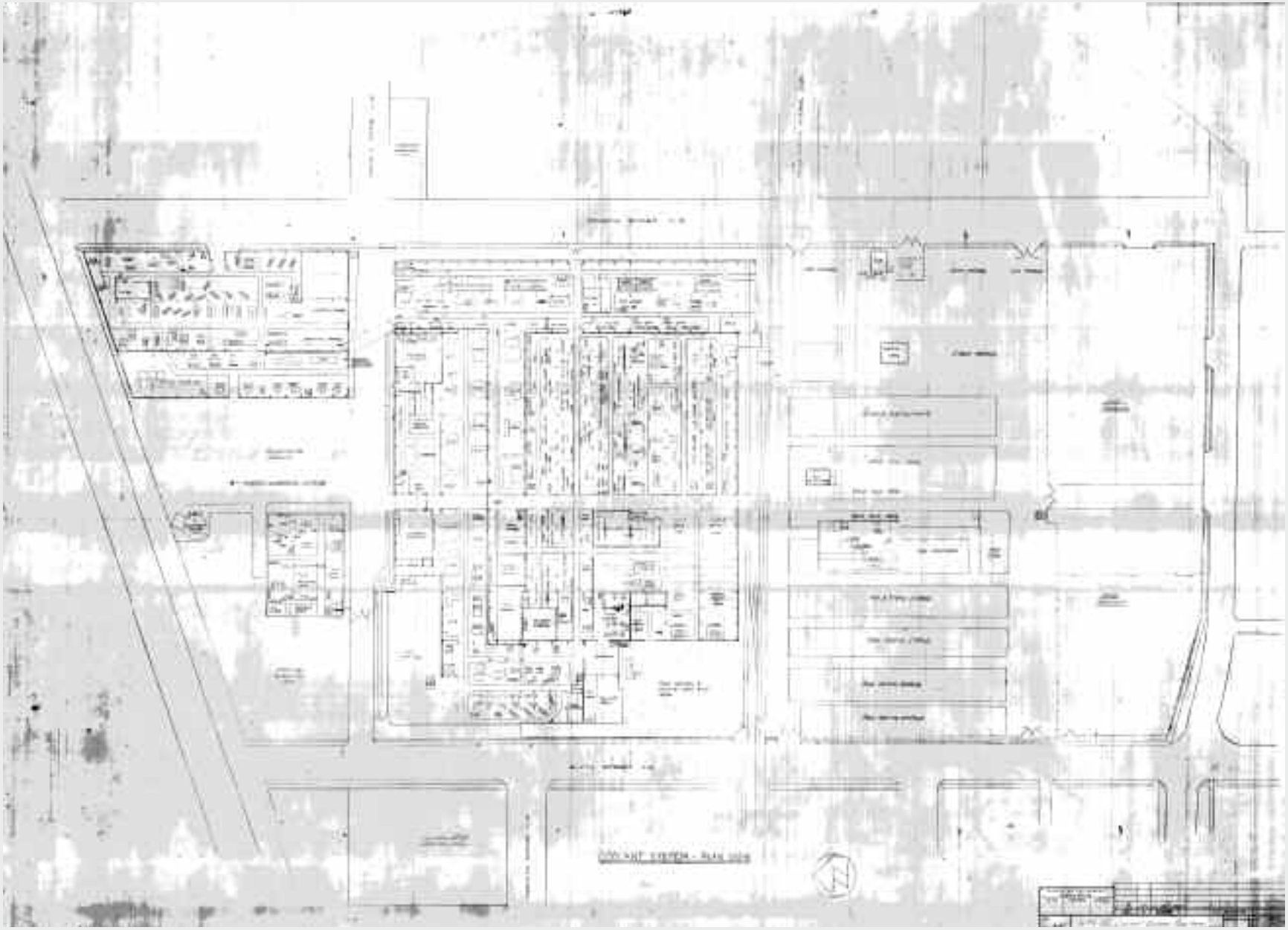


Figure 34.
Link-Belt Speeder Complex Site Plan Ca. 1970 showing yard storage and alphabet named interior construction bays (Cedar Rapids Public Works Department, Facilities Maintenance Services).

Bibliography

Several major resources were consulted for this publication. The Link-Belt Speeder Corporation Building Complex: State Historical Society of Iowa Site Inventory Form (ISIF, 2/22/2011), by Marlys A. Svendsen, provided a wealth of information on the history and evolution of the complex. Svendsen prepared the ISIF in her capacity as Historic Preservation Project Specialist for the Iowa Homeland Security and Emergency Management Department. Additionally, the collections of the Carl & Mary Koehler History Center in Cedar Rapids, Iowa, provided a significant amount of information and images for the preparation of this booklet. Multiple primary and secondary resources were also consulted.

Newspapers

Carroll Daily Times Herald, Carroll, Iowa
1950 700 Strike at Link-Belt, Cedar Rapids. July 15.

Cedar Rapids Gazette
1926 Fairfield Factory will Move to City: 150 Families to Come Here with Concern, Speeder Machinery to Build on Circus Ground. October 1

1950 Strike Ended at Link-Belt Speeder Plant. September 24.

1956 Growing Industrial City. January 3.

1957 Link-Belt to Expand Plant During 1957. Undated.

1973 Two C. R. Plants: Link-Belt Sells Worldwide. June 17.
1976 1894-1976: Now Over 50 Link-Belt Crane/Excavator Models Serve All Major Markets Throughout the World. July 4.

1997 Times of Our Lives: 50 Years Ago. August 13.

1997 Times of Our Lives. September 3.

Denver Tribune, Denver, Indiana
1920 Reports Factory Started. January 1.

Oakland Tribune, Oakland, California
1939 Link-Belt to Merge Two Machine Groups. April 30.

State Historical Society of Iowa

Svendsen, Marlys. A.,
1997 Commercial & Industrial Development of Cedar Rapids, Iowa, c. 1865-c. 1945. National Register of Historic Places Multiple Property Documentation Form. Prepared for City of Cedar Rapids, Iowa; listed on the National Register, 1997.

2008 *Young's Hill/Kingston Neighborhood Historical and Architectural Survey* Report, June 2008. Prepared for the City of Cedar Rapids and Department of community Development, Housing Services.

Svendsen, Marlys A., IHSEMD
2011 Link Belt Speeder Corporation Building Complex: State Historical Society of Iowa Site Inventory Form. Prepared by Iowa Homeland Security and Emergency Management Division for the Federal Emergency Management Agency (FEMA)

Other References

Sanborn Map Company
var. Fire Insurance Maps for Cedar Rapids, Iowa, 1884, 1889, 1895, 1913, 1913, updated to 1931, 1949, and 1970. Sanborn Map Company, New York.

FMC/Link Belt Speeder Corporation
undated General Specification: Link-Belt® 25-tn (22.68 metric ton) Wire rope crawler crane/excavator LS-98.

2003 The Link-Belt Story. Accessed online April 15, 2014, at <http://www.linkbelt.com/masters/home_about.htm>.

1957 Link Belt Speeder LS-98. Road Builder's Equipment Co., Memphis, Tennessee.

Jerome Greenberg
1948 Plant Study, Link-Belt Speeder Corporation. Thesis, State University of Iowa, August 4, p. 1. [Found in University of Iowa Special Collections, accessed December 19, 2013.]

Link-Belt Speeder
1961 K-608 Series Spec. Sheet. Link-Belt Speeder Corporation, Cedar Rapids, Iowa.

2010 Speeder Machinery Corporation, c. 1925-1936 and n. d. Historical Construction Equipment Association, Bowling Green, Ohio.

William Dana Ewart (U.S. Patent)
1874 Improvement in Drive –Chains U.S. Patent Office, Patent No. 154,594, dated September 1, 1874. Reissue No. 6,387, April 20, 1875, and No. 10444, Feb. 5, 1884. Accessed at <http://www.google.com/patents/USRE10444>.

Link-Belt Speeder Corporation
undated Speed-O-Matic, U.S. Trademark No. 19500503. 1st Renewal 19721014. Accessed at <http://tess2.uspto.gov/bin/showfield?f=doc&state=4806:t2j64h.2.4>.

1927 Advertisement. Engineering News-Record 99(15):68.

ca. 1965 Historical Sketch of Link-Belt Speeder Corporation and its Antecedent Setting out its Relationship with Iowa Electric Light and Power Company, Its Predecessor and Subsidiary.

Books/Articles

Charles Henry Davis
1913 National Highways Bring About Good Roads. National Highways Association, Washington D.C., pp.14-19.

Weingroff, Richard. F.
2013 Good Roads Everywhere: Charles Henry Davis and the National Highways Association. Federal Highway Administration, Washington, D.C. Accessed at <http://www.fhwa.dot.gov/infrastructure/davis.cfm>.

Haddock, Keith
2007 *The Earthmover Encyclopedia: The Complete Guide to Heavy Equipment of the World.* MotorBooks, Minneapolis.

References

[1] "Growing Industrial City," *Cedar Rapids Gazette,* January 3, 1956. Note: Howard Hall was the founder of the Iowa Manufacturing Company and a prominent Cedar Rapids businessman.

[2] "Times of Our Lives: 50 Years Ago," *Cedar Rapids Gazette,* August 13, 1997.

[3] Charles W. Wixom, *ARBA Pictorial History of Road Building* (American Road Builders' Association, 1975), 44.

[4] Quoted in Wixom, *ARBA Pictorial History,* 44.

[5] Charles Henry Davis, *National Highways to Bring About Good Roads* (Washington, D.C.: National Highways Association, 1913), 14-19.

[6] Davis.

[7] Richard. F. Weingroff, U.S. Department of Transportation, Federal Highway Administration, "Federal Aid Road Act of 1916: Building the Foundation," *Public Roads* 60 (1, Summer 1996), accessed April 15, 2014, at <https://www.fhwa.dot.gov/publications/publicroads/96summer/p96su2.cfm>.

[8] Weingroff, "Federal Aid Road Act of 1916."

[9] Iowa Department of Transportation, "A Symbol of Freedom, Interstate 50 Years 1956-2006," *Inside: Iowa Department of Transportation* (June 2006):8.

[10] Iowa Department of Transportation, "A Symbol of Freedom," 11.

[11] James M. Dodge, President Link-Belt Engineering Co., "History of the Link-Belt Industry," *Industrial World: Devoted to the Metal. Electrical. Mining & Allied Industries* 78(26, June 28, 1906):753.

[12] Charles Piez, *Personal Reminiscences of James Mapes Dodge,* 1916. Charles Piez was president of Link Belt Co. in 1916 when this was published.

[13] J.V.E. Schaefer, "The Design of Elevating and Conveying Machinery," Technograph, 1897, 48.

[14] The Historical Society of Pennsylvania, *Collection 3091: Frederic V. Hetzel* (1870-1946) Papers, Finding Aid, 2007.

[15] "The Link Belt Story," accessed December 3, 2013, at <http://www.linkbelt.com/about/history1.htm>.

[16] "Locomotive Cranes Solve Storage Problems," *Rock Products and Building Materials* 27(No. 5, January 7, 1916):4.

[17] "Locomotive Cranes Solve Problems," *Rock Products,* p. 4.

[18] "1894-1976: Now over 50 Link-Belt Crane/Excavator Models Serve all Major Markets Throughout the World," *Cedar Rapids Gazette,* July 4, 1976.

[19] U.S. Patent & Trademark Office (USPTO), Trademark No. 0565211, "Speed-O-Matic" by Link-Belt Speeder Co., registered on October 14, 1952.

[20] "Reports Factory Started," *Denver Tribune,* Denver, Indiana, Thursday, January 1, 1920.

[21] Jerome Greenberg, "Plant Study, Link-Belt Speeder Corporation," Thesis, State University of Iowa, August 4, 1948, p. 1. [found in University of Iowa Special Collections accessed on December 19, 2013]

[22] Marlys Svendsen. Link Belt Speeder Corporation Building Complex: State Historical Society of Iowa Site Inventory Form. Prepared for City of Cedar Rapids, Iowa and Iowa Homeland Security and Emergency Management Division, 2011.

[23] "Fairfield Factory Will Move To City: 150 Families to Come Here with Concern, Speeder Machinery Corporation to Build on Circus Ground," *Cedar Rapids Republican,* October 1, 1926.

[24] "Historical Sketch of Link-Belt Speeder Corporation and its Antecedent Setting out its Relationship with Iowa Electric Light and Power Company, Its Predecessor and Subsidiary," undated ca. 1965.

[25] Svendsen.

[26] "Speeder Machinery Corporation, c. 1925-1936 and n. d," Historical Construction Equipment Association, 2010, accessed December 3, 2013, at <http://archives. hcea.net/?p=collections/findingaid&id=354&q>.

[27] "Link Belt to Merge Two Machine Groups," Oakland Tribune, Oakland, California, April 30, 1939.

[28] Greenberg, Plant Study, 3.

[29] "The Link Belt Story."

[30] Svendsen.

[31] Brochure for YC-9 Cargo Crane, ca. 1945-46.

[32] Svendsen.

[33] Greenberg, *Plant Study*, 8.

[34] "Times of Our Lives," *Cedar Rapids Gazette*, September 3, 1997.

[35] Gary Britson, "Two C.R. Plants: Link-Belt Sells Worldwide," *Cedar Rapids Gazette*, June 17, 1973.

[36] Svendsen.

[37] Svendsen.

[38] Svendsen.

[39] Quoted in Marlys A. Svendsen, "Link Belt Speeder Corporation Building Complex from "Link-Belt to Expand Plant During 1957," *Cedar Rapids Gazette,* no date (clipping in Cedar Rapids Historical Archives vertical files).

[40] Svendsen; Gary Britson. "Two C.R. Plants: Link-Belt Sells Worldwide."

[41] Iowa Department of Transportation, "A Symbol of Freedom, Interstate 50 Years 1956-2006," 20.

[42] Iowa Department of Transportation, "A Symbol of Freedom, Interstate 50 Years 1956-2006," 20.

[43] Svendsen; "1894-1976: Now over 50 Link-Belt Crane/ Excavator Models Serve all Major Markets Throughout the World."

[44] Britson; Svendsen.

[45] Britson; Svendsen.

[46] Svendsen.

[47] Svendsen.

[48] "Iowa Flood of 2008," Wikipedia, accessed February 14, 2014, at <http://en.wikipedia. org/wiki/Iowa_flood_of_2008>.

[49] City of Cedar Rapids, "City Service Center, 500 15th Avenue SW," 2014, accessed April 17, 2014, at <http://www.cedar-rapids.org/city-news/crprogress/cityfacilities/pages/cityservicescenter.aspx>.

[50] Rick Smith, "Cedar Rapids Votes For New Public Works Building," accessed February 14, 2014, at <http://www.kcrg.com/ news/local/Cedar-Rapids-Votes-For-New-Public-Works-Building-135148303.html>.

[51] Svendsen.

[54] Marlys Svendsen. Young's Hill/Kingston Neighborhood Historical and Architectural Survey Report. June 200. Prepared for the City of Cedar Rapids and Department of community Development, Housing Services, 27.

[55] Svendsen. *Young's Hill/Kingston Neighborhood,* 27.

[56] Svendsen, *Young's Hill/Kingston Neighborhood,* 28.

[57] Svendsen *Young's Hill/Kingston Neighborhood,* 64.

[58] Svendsen *Young's Hill/Kingston Neighborhood,* 64-79.

Glossary

Chain Belt	A belt constructed of links of metal or other material (as leather) and used in power transmissions for material-handling equipment such as elevators and conveyors.
Clamshell	An excavating machine's bucket or dredging bucket opening at the bottom, consisting of two similar pieces hinged together at the top.
Crowd	Mechanism used to control the depth of cut while digging. It also is used to control the positioning of the bucket.
Dragline	An excavating machine in which the bucket is attached by cables to a boom and operates by being drawn toward the operator. Invented by John W. Page in 1904.
Excaloder-LS-98	Link-Belt Shovel Crane model used in underground mining operations that featured a front load bucket for moving rock, sand, gravel, and other loose material.
Hoist	Pulling the bucket up through the bank (i.e., the bank of material being dug).
Locomotive Crane	A crane mounted on a railroad flatcar or a special chassis with flanged wheels.
Pile Driver	A machine for delivering repeated blows to the top of a pile for driving it into the ground; consists of a frame that supports and guides a hammer weight, together with a mechanism for raising and dropping the hammer or for driving the hammer by air or steam. Crane pile drivers are mounted on a derrick crane, excavator, tractor, or truck. In the case of a pile driver mounted on a crane or excavator, the upper part of the mast is connected to the boom head by a hinge, and the lower part is connected to the swiveling platform. The piles and pile-driving equipment are raised by winches on the crane or excavator.
Power Shovel	A bucket-equipped machine, usually electrically powered (by gasoline or diesel fuel), used for digging and loading earth or fragmented rock and for mineral extraction.
Truck Crane	A material-handling machine consisting of a crane that is mounted on a truck-type vehicle to provide mobility and maneuverability.
Yard Capacity	Amount of dirt or material a dragline or excavator crane can move per bucket load.